Arkys lancearius -
Triangular Spider

METAMORPHOSIS
AUSTRALIA

Magazine of the Butterfly & Other Invertebrates Club

ISSUE NO: 64 DATE: MARCH 2012 ISSN: 1839-9819
Price $6.00 http://www.boic.org.au

Planning and Organizing Committee 2011

President:	Ross Kendall	07 3378 1187
Vice President:	John Moss	07 3245 2997
Treasurer:	Rob MacSloy	07 3824 4348
Secretary:	Position not filled	
Magazine:	Daphne Bowden (daphne.bowden1@bigpond.com)	07 3396 6334
Publicity and Library:	Lois Hughes	07 3206 6229
Excursion Convenor:	Alisha Steward	07 3275 1186

Planning and Organization Meetings

A quarterly meeting is scheduled in order to plan club activities and the magazine. See BOIC Programme.

Contact Address and Membership Details

PO Box 2113, Runcorn, Queensland 4113
Membership fees are $25 for individuals, schools and organizations.

Aims of Organization

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

Magazine Deadlines

If you want to submit an item for publication the following deadlines apply:

March issue – February 1st
June issue – May 1st
September issue – August 1st
December issue – November 1st

Material in this magazine is copyright

Cover

Arkys lancearius - Triangular Spider – Painting by Lois Hughes

FROM THE PRESIDENT

I am sure you will find interesting reading in this edition of our magazine. Rob Whyte is to be congratulated for the detailed dedication that produces his continuing series on spiders and I know his upcoming book will be a colourful addition to the literature.

Space does not permit reference to all of our writers but we thank them for sharing the results of their interests and the large amounts of time taken in each particular study. Lois took up the challenge of producing the cover painting with her usual dedication and skill while Daphne patiently assembled, consulted and combined to achieve the final product.

I issue a strong invitation to all members to attend our excursions and meetings as these provide an opportunity to meet other members, to learn and to share observations and experiences. The Annual General Meeting at IndigiScapes on April 14th next will be followed by an interesting presentation by long-time club member Graham McDonald. Due to increased printing and postage costs, it is proposed that, at our AGM, our annual subscription be increased to $30.00 which will then just meet those costs.

Best wishes ***Ross***

IN THIS ISSUE

Creature Feature - Australia's Crown Jewels - Australian *Arkys* species 3
The presence of *Lampides boeticus* in the Society Islands..... 9
Field notes on butterflies in the Society Islands, French Polynesia: Part 2: Tahiti Nui..... 13
Notes on the life of Charles King - Naturalist and Amateur Entomologist 19
The Butterfly - A brief history and examples of survival techniques..... 22
The TJ Berlese Bottle..... 25
Life history notes on the Spotted Pea-blue, *Euchrysops cnejus cnidus*..... 27
Crabby Spider Encounters..... 29
Fungi! Can this be the future as a biological control agent to manage *Musgraveia sulciventris* 30
There is so much still to learn! - *Pheraspis symmetra* Turner, 1917..... 31
In a Corinda garden - Moth Views..... 32
Excursion Reports - Lota Boardwalk - Saturday 22nd October, 2011 34
Excursion to the Tweed Region - Saturday 26th November, 2011 36
Mystery Insect - Who Lives Here Back O'Bourke? 37
You asked..... 38
BOIC Programme..... 39

Australia's Crown Jewels - Australian *Arkys* species, treasures of the bush, a pictorial account - *Robert Whyte* www.arachne.org.au

Australian Arkys species are some of our most attractive and most photographed spiders, yet many still remain undescribed and as a group their biology is barely known. These spiders are in the Araneidae, an orb weaver family, yet Arkys gave up the web snare as a strategy and took up ambush hunting. Typically, they conceal themselves amongst green foliage, often with flowers, and grab their prey with strong front legs. They may subdue the prey with a venomous bite, or wrap it in silk for later consumption. In rainforests, especially in South East Queensland, they are easily seen going about their business.

The Triangular Spider *Arkys lancearius*, featured on the cover of this issue, is relatively rare in Brisbane, the heart of its natural range in South East Queensland. Its history may parallel the history of the Richmond Birdwing butterfly, an iconic species once common in Brisbane but displaced by industrial and suburban sprawl. Many invertebrates were no doubt displaced with the growth of Brisbane and consequent habitat loss and pollution.

Early botanical records by the Colonial Botanist Frederick Manson Bailey, an established botanist already in charge of the herbarium at the Queensland Museum, spoke of the Three Mile Scrub as being a sub tropical paradise. The location of Three Mile Scrub has been confirmed by present-day herbarium botanist Sandy Pollack as Ashgrove Avenue.

This area previously must have been thick with Richmond Birdwing butterfly and Triangular Spider. Nowadays to find these species you will have to go to the fringes of its former range, Neurem Creek or Beerwah to the north, and Tamborine to the south, to see these animals in the wild.

Arkys lancearius Triangular Spider. This was the species described by Walckenaer in 1837 as the type for the genus *Arkys*. This is a beautiful ambush-hunting Araneid found on the leaves of green shrubs throughout Australia including Tasmania. It is iidentifiable by the two large, yellow, roughly circular blobs in the anterior third of the upper surface of the abdomen, which has a series of white blobs within black blobs, like a very coarse dotted line, all around the outside margin. This species is the most common of its genus, quite abundant in better-quality habitat but rarely noticed. *Arcys*, the generic name sometimes used, was in error. The species name *lancearius* refers to the triangular spear head or heart-shaped, pointy bit fastened onto the end of a lance. Photo Dr Greg Anderson

During a recent spidering visit to Pencil Creek, just west of Mapleton Falls National Park, all it was necessary to do to find Triangular Spiders was walk through the bush. We were soon festooned with Triangular Spiders falling from the foliage on their silken threads. Within a few metres it was possible to collect dozens, if not hundreds, of specimens for photography and study.

Arkys lancearius is the entry point for a fascinating genus. Previously known as both *Aerea* Urquhart, 1891 and *Archemorus* Simon, 1893, spiders given these generic names were found to be junior synonyms of a very early genus *Arkys* Walckenaer, 1837. The rule of seniority applies in taxonomy, so *Arkys* it is. Even *Neoarchemorus*, invented by Ramon Mascord in 1968 to differentiate spiders with arms outstretched as opposed to those who wait with arms folded, has been subsumed into *Arkys*.

So unlike other orbweavers in their behaviour, it is not surprising *Arkys* spp. have found themselves assigned to different families over their scientific history. They have been assigned previously to Thomisidae, Tetragnathidae and Mimetidae. Recent molecular studies have compared the DNA across many species and confirmed their placement in the Araneidae. (Framenau, Scharff & Harvey, 2010)

In their 2010 publication Framenau et al. added four new species of *Demadiana* to the subfamily Arkyinae to which *Arkys* belongs and resolved many taxonomic problems within the group. Arkyinae is one of the smallest subfamilies in the Araneidae with about 34 species, and restricted to the Australasian region, the epicentre seeming to be Queensland with species found also in Indonesia, Papua New Guinea and New Caledonia as well as other parts of Australia.

The following pictures and brief descriptions are just some of the members of this genus, remarkable for their complicated shapes and brilliant colours.

Arkys alatus Keyserling, 1890 Winged Arkys is a small ambush hunter on foliage in all types of habitats with good rainfall from central Queensland to Victoria. It is a flattish spider with white, cream, dark-grey or brown overall colour and ornate patterns and knobs. The cephalothorax is just slightly longer than wide. The lateral eyes are on a projecting knob. The pattern on the abdomen can resemble a ghoulish looking skull or a spectral dog's head. The name *alataus* means winged. ♀ 6mm ♂ 5mm

Photo Dr. Greg Anderson

Arkys bulburinensis Heimer, 1984 The holotype for this species was collected and photographed by Ray Mascord, seen in his 1980 field guide plate 29.2 on page 77. This specimen collected 3-Oct-09 Mapleton Falls NP.
Photo Dr Greg Anderson

Arkys cornutus L. Koch, 1872 Horned Triangular Spider is an ambush hunter, active on foliage at night. Its name *cornutus* means horned, referring to the horn-like projections at the front of the cephalothorax. Photo Rob Whyte

Arkys clavatus Keyserling, 1890 Studded *Arkys* is a small to medium-sized ambush hunter on foliage, waiting with outstretched arms for insects and other arthropods to come within range. It has a longer, narrower abdomen than many other similar *Arkys* species. It is found throughout mainland Australia's east coast and hinterland, mostly in the southern states. The name *clavatus* means studded with nails, referring to the pattern on the abdomen.
♀ 6mm ♂ 4mm
Photo: Michael J. Barritt McCartins Track, North Foster, Gippsland

Arkys curtulus (Simon, 1903) Small Bird-dropping Spider) is a medium-sized spider which hunts by ambush during the day on the exposed surfaces of green leaves, with legs drawn up, waiting for prey. Resembling a bird dropping, it is extremely well camouflaged and therefore rarely noticed, but is not uncommon in eastern mainland states from Victoria's south coast to Cape York and adjacent hinterlands. Its colours and patterns are extremely variable, ranging from brown through orange to black.
♀ 8mm ♂ 5mm Photo Rob Whyte

Arkys dilatatus (Balogh, 1978) Dilated Arkys is a small, rather nondescript ambush hunter in coastal rainforest from south eastern to northern Queensland. The rearmost of the central quadrangle of eyes are slightly larger and slightly wider apart. The carapace, or top of the cephalothorax, is flat and covered with pale, forward-pointing hairs. The cephalothorax is longer than wide, with more or less straight sides, very slightly wider at the rear. ♀ 4.5mm ♂ 3.5mm Photo Rob Whyte

Arkys sp. Mascord's Pretty Archemorus was recorded by Mascord in 1980 as *Archemorus* species. He intended to name it *A. pulcherrimus*. While an orb weaver like other *Arkys* seems to be an ambush hunter, disguised among branches. Body length of the female up to 8 mm, the male: about 5 mm. The double pointed abdomen, somewhat like *Cyrtophora exanthematica* and cross-like pattern in orange is distinctive. When in repose the spider is tucked up in a debris-like squarish blob. ♀ 8mm ♂ 5mm Photo Rob Whyte

Arkys sp. Candy-coloured Arkys is a small, undescribed *Arkys* found in sub tropical and dry rainforest as well as lightly wooded eucalypt scrub. Its appearance suggests it is well camouflaged against bark, twigs, foliage and flowers in dappled sunlight. ♀ 4mm ♂ 3mm Photo Rob Whyte

Arkys sp. Mount Mee is a small rainforest species with bright yellow flanks of the abdomen. Rather scarce in suitable habitat in South East Queensland around the Mount Mee region, but locally common in some pockets. ♀ 3.5mm ♂ 3mm Photo Rob Whyte

Arkys speechleyi (Mascord 1968) Speechley's Arkys is well camouflaged for the rainforest, the greenish abdomen heavily sclerotised and with dimples reminiscent of *Dolophones* species. In 1968 Mascord established *Neoarchemorus* with *N. speechleyi* as the only species, based on the shape of the carapace and abdomen, eye pattern, and spine arrangement on the legs. These distinctions were found to be insufficient for a new genus by Framenau, Scharff and Harvey in Systematics of the Australian orb-weaving spider genus *Demadiana* with comments on the generic classification of the Arkyinae (Araneae : Araneidae). ♀ 7mm ♂ 5mm Photo Rob Whyte

Arkys vicarius (Balogh, 1978) Moth Mimic has a structure and pattern resembling a small moth. It closely resembles *A. dilatatus* but the abdomen is constricted to a waist nearly halfway along, slightly closer to the leading edge. The colour is variable but seems always to have a bright white section across the rear and penetrating inwards along the upper surface of the abdomen ♀ 4mm ♂ 3mm
Photo Rob Whyte

Robert Whyte, born in Melbourne in 1955, is an Australian author, editor and journalist. His works include a practical guide to creek restoration *The Creek in Our Back Yard, 2011.* In 1976 he was awarded a One Year Young Writer's Fellowship by the Literature Board of the Australia Council for the Arts. In 1985 he was responsible for editing, design and layout of "Environment Victoria", the magazine of the Conservation Council of Victoria, now Environment Victoria. Since 2002 he has been an active environmentalist, photographer and nature writer and has written and presented on biodiversity, including *Spidiversity*, an article published in Australasian Arachnology. In 2010 he was appointed to the position of Director, Save Our Waterways Now, a community environmental organisation restoring habitat in Brisbane's west. He is currently working on a "*A field Guide to the Spiders of Australia*" for CSIRO Publishing.

The presence of *Lampides boeticus* (Lepidoptera: Lycaenidae) in the Society Islands and notes on other butterflies seen in French Polynesia. Part 1: Mo'orea & Bora Bora (continued as Section 2) - *Kelvyn L. Dunn*

Bora Bora Island

With its jagged central peaks (Fig. 16), one rising to over 700m, and its picturesque aquamarine lagoon, the volcanic Bora Bora is an island paradise that has enchanted visitors since the voyages of Cook, and who himself called it the 'Pearl of the Pacific'. Vaitape, on the western shore, is the main settlement (Fig. 17) and services the tourist haunt at Matira Point, about six kilometres farther south. The hiking trail to the central peaks starts at Vaitape, and whether or not visitors sweatily explore these rugged upland regions, many will trudge into the restaurant known as 'Bloody Mary's' near the south end of Povai Bay for refreshments! No exception to this trend, I headed for this 'foraging site' and, in process, included this coastal strip as another survey area during my two days on this island. It was in Vaitape that I first discovered *Lampides boeticus* in French Polynesia (see Dunn 2011: Figs 1-3). Although Tennent (2006) did not list this cosmopolitan species from any Society Islands in his exhaustive checklist of the broader South Pacific region, it could be widespread in the archipelago and perhaps beyond. I found it frequently during my stay and so it seems astonishing that there are no other records of it. It may be irruptive in nature, more often absent than not, and perhaps invades to breed locally for short periods following fortuitous windward migrations from farther west. Adults were mostly very fresh (see Dunn 2011: Figs 1-2) and were seen ovipositing (see Dunn 2011: Fig. 4).

I had hoped to ascend the central peaks to seek any montane species that might be lurking there undetected to date – particularly *Nacaduba* species – so I keenly sought directions on how to get up there (without a guide). But the two local gendarmes I asked were reluctant to direct me to the start of the walking trail behind the village. They seemed clearly upset by the alarming situation the previous day when another tourist (from my hotel at Matira Point) had mobile-phoned to say that he had become lost in fog on Mt Pahia. Soaked repeatedly by torrential rains he spent a miserable night squatting in the jungle, so he later told me, but had returned safely via the track (which wisely he had not ventured from) the next morning once visibility had improved. The Gendarmes reminded, in mostly interpretable English, which from memory went something along the following lines: 'Monsieur, we do not want any more silly tourists (meaning solitary and would-be explorers) getting lost up there in the jungle' as had 'only happened just yesterday! Surely you have heard of it?' That said, it would have been treacherously slippery too given the heavy rains overnight, perhaps repeating my earlier experiences of slippery-sliding in volcanic mud whilst descending very steep sloshy trails in Rarotonga (Cook Islands) some years earlier. Indeed, I fell several times in the Cooks – a couple heavily too – whilst carefully

walking down a rainforest stream! In fine volcanic soils it is not hard to lose one's footing, whether on two or on four! At a higher altitude (in the Cooks) an accompanying stray dog was kindly guiding me into the uplands towards Te Ko'u peak – it seemed to know the track and waited obediently for me to clamber up the chain-sections – when it suddenly lost its own and tumbled down a crater! Mt Pahia (661m) on Bora Bora though was surely a missed opportunity, but is a respected challenge that must await another visit – at a drier time! And, as for the mongrel and its misadventure in Rarotonga, it astonishingly scurried back up the slope on its belly (literally) – by dog-paddling as if in water rather than mud – but I didn't think I might be able to do that! I took it as an omen, reinforced too by the cool sensation of misty rain that had engulfed me again. Anyway, back to Bora Bora and the species seen there:

Vaitape, 9 Mar 2007, 1050-1430h TAHT, (3 hours & 40 minutes). Habitat: residential areas and agro-forest. Weather: Sunny & breezy. Generally few butterflies were to be seen – long waits between individuals. Only three species recognised:

Lampides boeticus – Many males and fresh females were seen in a localised setting between 1050-1110h. I photographed a female perching on a leaf and saw another nearer the beach ovipositing on pods and buds of a rattlepod (*Crotalaria* sp.; Fabaceae) (see Dunn 2011: Fig. 3). Here several adults were feeding at the flowers of Wedelia (*Sphagneticola trilobata*; Asteraceae) a common weed in the Pacific. During mid afternoon others were found abundantly on the south side of town, especially in herb and weedy areas where *Crotalaria* plants were common. I saw one female nectaring at the yellow flowers of the rattlepod species at 1430h. Three males and one female were examined closely at this site and their species' identification was confirmed with certainty – the first record of the species from the Society Islands.

Hypolimnas bolina – One very fresh female of the *nerina* form (see Tennent 2009, p.134 'top centre') was photographed at 1215h ovipositing and basking in agro-forest. One freshly emerged male was photographed at 1220h whilst perching (see Dunn 2011: Figs 9-10). Dense areas of *Synedrella nodiflora* (Asteraceae) were present along a rural-forest track but these plants were less obvious where the male perched. Rains fell the previous night and the track was still wet with large puddles – this may have resulted in a local emergence here.

Zizina labradus (ssp. *cheesmanae*) – One male seen feeding at 1350h at a deep-pink flowering herb (Fig. 18), probably the Red Sow-thistle *Emilia fosbergii* (Asteraceae), an invasive weed in the Society Islands. The butterfly's underside was seen clearly and its species' identification confirmed with certainty.

Bloody Mary's Restaurant, Povai Bay, 9 Mar 2007, 1545h. Habitat: coastal shrub-lands & herb-wastelands near residential and construction areas. Weather: Sunny & breezy.

Lampides boeticus – Two males seen patrolling about yellow rattle pods.

Matira Point, 10 Mar 2007, 1015h & 1205h. Habitat: shrub-lands & herb-wastelands near hotel gardens and residential areas. Weather: Sunny & breezy.

Lampides boeticus – Two males seen patrolling about rattle pod plants at 1015h; at 1205h I photographed an old female nectaring at their yellow flowers (see Dunn 2011: Fig. 4).

Belvedere Lookout, Povai Bay, 10 Mar 2007, c.1100h. Habitat: rainforest clearing. Weather: sunny & breezy. No butterflies seen during the slippery ascent through deeply shaded littoral rainforest along the trail starting near Club Med (two kilometres northwest of the point proper), nor in the shrub-land at the lookout, circa 100m above sea level. A swarm of dragonflies was hill-topping here.

Motu Mute, Bora Bora airport, 10 Mar 2007, 1445-1545h. Habitat: industrial estate near littoral she-oak woodland. Weather: sunny. One hour spent looking near airport (whilst waiting for departure flight); garden area contained blossoms of a variety of flowers but no butterflies were seen here despite being present in mid afternoon (normally a prime-time feeding period in my experience in tropical eastern Australia).

PS: For the record, the French-speaking tourist who suffered misadventure on Mt Pahia told me that he had seen "no papillons" at the actual summit on the 8th but felt he had seen "about five different kinds" along the track up. His description of one matched with that of the male of *H. bolina*, which was perched "on the lower slopes"; and its companion females might have accounted for one or two more 'different kinds' given their variability. He also reported "a small brown one" higher up, which was perhaps *Phalanta gabertii* or maybe *Junonia villida* but there were "not many of these" to be seen, he said. He could not recall any details of the other kinds.

Acknowledgement

Ian Faithfull (DPI, Knoxfield) provided the probable identification of the Sow-thistle.

References

Dunn, K.L. 2011. The presence of *Lampides boeticus* (Lepidoptera: Lycaenidae) in The Society Islands and notes on other butterflies seen in French Polynesia. Part 1: Mo'orea & Bora Bora. *Metamorphosis Australia, Magazine of the Butterfly & Other Invertebrates Club* 63: 27-32 (*partim*).

Tennent. J. 2006. *A checklist of the butterflies of Melanesia, Micronesia, Polynesia and some adjacent areas.* Zootaxa 1178. Auckland, New Zealand: Magnolia Press.

Tennent, J. 2009. *A field guide to the butterflies of Vanuatu (Ol butterfly blong Vanuatu).* England: Storm Entomological Publications.

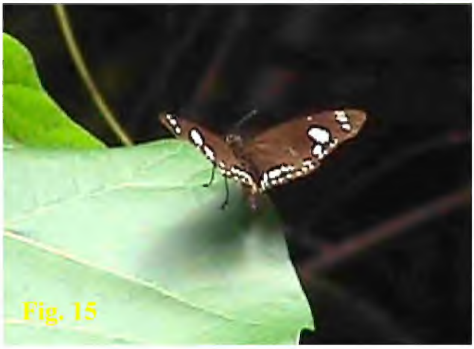


Fig. 13. The author (KLD) watching for *Euploea* in secondary scrub near Putoa waterfall, Mo'orea: haunt of *E. lewinii*.
Fig. 14. Creek-side habitat of *H. bolina* near Putoa waterfall area, Mo'orea.
Fig. 15. *E. lewinii* basking in dense secondary scrub. Putoa waterfall area, Mo'orea, 27 Feb. 2007.
Fig. 16. The central massif on Bora Bora, Mt Pahia (661m) and Mt Otemanu (727m).
Fig. 17. Vaitape village at the base of Mt Pahia, Bora Bora.
Fig. 18. The Red Sow-thistle, probably *Emilia fosbergii* (Asteraceae) – nectar source for *Z. labradus* on Bora Bora.

Field notes on butterflies in the Society Islands, French Polynesia:
Part 2: Tahiti Nui (Section 1 – Introduction & coastal region) - *Kelvyn L. Dunn*

Tahiti Island

Unlike regular tourists, my aim in visiting the exotic destination of Tahiti Island (in 2007) was not to café-bar crawl into the wee hours, nor sunbake on black-sand beaches – enticing as that might be to many, nor to trawl shopping outlets – wallet heavily laden – seeking pearls and other merchandise. The agenda was uncomplicated and science-focussed: to seek out butterflies and learn about their habits on the slopes and ridges of Mount Marau (Fig. 19). And what could be more alluring to the keen naturalist than this? Situated close to the city of Pape'ete, this volcanic mountain range, embellished by its sheer southern escarpment, rises steeply to 1493m and is home to an endemic butterfly species, *Nacaduba tahitiensis*. One could go by taxi to the towers (if the driver is willing) but I chose to walk it – a closer-to-nature experience and one the ardent explorer enjoys most! Commencing near sea level, a couple of kilometres south-east of the airport, the partially surfaced road extends for 10 kilometres from the base junction (zero point) to the first summit tower. The second tower is some 700-800m beyond this point (and it was here that I spent most time). The ascent is marked at kilometre intervals by road-markers which made survey segments identifiable and offered a spatial transect. This helped systematise my record making on foot (but nowadays I carry a GPS device to more accurately determine my position and to provide approximate altitudes of sites where butterflies are seen).

Ecologically *Nacaduba tahitiensis* is a very poorly known species – one that may be related to the Indo-Australian species *N. kurava* based on egg structure – and has been recorded in scientific literature only from the summit of this one mountain (Hara & Hirowatari 1989). Its very isolated existence on a single island in the South Pacific had actually prompted my trip to Tahiti to study it (that is, once I had found out just how easily accessible the summit towers were!) The types were collected in September 1988 (towards the end of the dry season) during fine and cloudy weather in late morning, specified as "1030-1200h". And according to that same report (which contained the original description of the species as well) the adults were locally abundant in suitable upland habitat. They were to be found "flying in flocks over sunny shrubs of about 3m height", so it was reported (Hara & Hirowatari 1989: 136) – certainly raising my hopes on seeing some, but their follow-up remark that "they disappeared in the shade" was a touch disconcerting albeit not unexpected. Obviously at that altitude (about 1400m or so) most or all butterfly activity would cease during overcast weather, but in the wet season (the time of my visit) the stakes for poor weather were quite high. So my first expedition upward – being no short walk in the hot and humid conditions during March – was marked by a measure of hesitation and doubt as I ascended, regularly assessing the sky for signs of major change or an unpredicted (and possibly fierce) electrical storm. The weather remained fine on the

slopes but, disappointingly, mist and wispy-cloud completely shrouded the summit area much of the time (making butterflies very hard to find!) Although feeling a little muscle-ached on my return to town, I keenly hiked up from the base the following day too, hoping for slightly better weather on the plateau, and to ensure that I had not missed any resident species at the various elevations.

Upon reaching the second tower (on my first ascent) I searched around the fence-perimeter and scarp, replete with flowering *Lantana camara* (Verbenaceae) (Fig. 20), with little success. There was reduced visibility at times – the sun was fogged out – almost no butterflies were feeding, and few adults were to be seen flying in the misty forest (and the view was largely obscured too). A couple of locals with whom I hitched a lift, part of the way up, had warned me (perhaps sensing I might be a reckless tourist) that there was a hazardous trail to a small peak…. "Don't go out there – its dangerous!" a female passenger remarked (in French-accented English) and in doing so valuably gave me directions to the trail (which I didn't know about) – a spine-ridge is ideal for territorial butterflies and was worth a look... The path along the narrow volcanic ridge (Fig. 21), which extends beyond the second tower, can be dangerously slippery during the wet and is edged by a sheer drop of about 700m (on the westerly precipice) tapering to about 1000m or more on both sides! It did look a tad unsafe, I thought, so I ventured only a little way (as I needed to get back safely to report on my adventures, of course) – far enough to be within the main butterfly lekking area and circuitry – and there I perched myself. It was here (Fig. 21), that the few species to be seen were patrolling actively, and regularly, and conveniently very low down. When passing clouds intermittently obscured the sun, or dulled the forests in heavily overcast weather, adults poised about 1m above ground on the wind-swept, stunted, vegetation that clings to steeper than 45 degree slopes (Fig. 22). The sudden coolness from encroaching mists limited their alertness, and their close presence and accessible perch sites on this double-edged spine ridge eased photography. Elsewhere, during those brief sunny periods when adults were detectable, approaching and achieving close-up images had proved arduous among the dense vegetation on the plateau (Fig. 23). Out there on the precipice though butterflies surely reigned supreme!

The spine-ridge was at best only 1.5 to 2 metres wide (Fig. 21) and when standing out there all I could see to my left and right was drifting cloud passing me by, and a denser mat some 100m or so lower down. This at least limited vertigo (during those courageous moments when I chose to look down or out) whilst cautiously walking back and forth in my quest. Normally I would have been awe-struck by the fabulous vista (Fig. 20), revealed fully when the clouds briefly parted below (especially on the second visit during better weather) were it not for the fine pebbles which weakened my footing at times! Unnerving at best and heightened by slippery volcanic soils, each adding uneasily to a sense of wobbliness, I stealthily approached perched adults armed with the video-cam in hand … but the adults were wary too and could see me

from quite afar! I calmed my instincts – just a smidgen – by squatting down from time to time to await butterflies that might land nearer to me! As I relaxed I soon appreciated a bird's-eye view of Pape'ete and, greater still, got up nice and close to two Tahitian specialties: that sought-out endemic lycaenid (which was quite abundant) and an endemic nymphalid as well! In what seemed a lengthy time spent along the trail, I achieved pleasing photographs of *N. tahitiensis* (Fig. 24) but the nymphalid, *Phalanta gabertii* (Fig. 25) proved flighty, roosted only rarely, and basked with wings widespread only once (no photo in that latter stance was achieved). Needless-to-say, of all my travels over the decades, searching for butterflies along the precipitous trail beyond the towers (Fig. 26) at about 1372m of steep elevation was an experience not to be missed and one not easily forgotten!

Now, before detailing my walking-transect into the island's cloud-forested interior (to follow on in Section 2 of this part), I list below my sight-records from in and about Pape'ete as both the preamble and coastal baseline for the main survey upland. Species inventory from my field notebook:

Taaone, Pira'e (near Pape'ete High School), 23 Feb 2007. c. 1340h. Habitat: residential. Weather: sunny.

Hypolimnas bolina (ssp. *otaheitae*) – One female of the archetypal form seen at 1340h. The archetypal female form is the (male-like) ancestral state from which an array of modifications and mimics later arose. These phenotypes can be preserved on very remote islands due to lessened selective pressures and by founder effect (which may have minimised the genetic influence of immigrants that arrived thousands of years later). A violet sheen surrounding the central white patches on the upper-side of both wings was prominent giving it a strikingly masculine appearance. An archetypal female from Mo'orea was illustrated in the first section of Part 1 (Dunn 2011, Figures 5 & 7).

Faarumai Waterfall, 20km (by road) east by north of Pape'ete. 23 Feb 2007, c.1430-1500h, Habitat: lowland rainforest. Weather: sunny. *No butterflies to be seen* (in about 15-20 minutes of focussed observations).

Taravao at Botanic gardens (about 53km by road from Pape'ete) 23 Feb 2007, 1600-1630h. Habitat: agro-forest. Weather: sunny. *No butterflies seen about roadside flowers or in garden/scrubby areas* (perhaps too late in the day).

Fautaua River, near small bridge in town, 25 Feb 2007, 1150-1200h & 1620-1700h (50 minutes of observations here during late morning and late afternoon). Habitat: residential. Weather: sunny & hot.

Hypolimnas bolina – Several females were seen; one or more had a residual orange dorsal patch to the fore-wing (no photo but from memory these were similar to the illustrated adult in Tennent 2009 p.135 bottom right), rather like figure

12 in Part 1 of this series (see Dunn 2011). One female of the archetypal form was photographed at 1150h as she perched near a cluster of yellow flowers on a tree with bipinnate leaves. A few females were seen inspecting herbs too, and one female of the archetypal form oviposited at 1200h. None was seen flying here on my return in late afternoon, despite the longer time spent searching.

Pool of Loti (Bain Loti), Fautaua River, about 2.5km SSE of Pape'ete. 25 Feb 2007, 1245-1620h (3 hours & 35 minutes). Habitat: secondary scrub. Weather: sunny & hot. In general there were very few butterflies about all afternoon and *none was seen after 1600h*. Four species were recognised with varied certainty:

Euploea lewinii (ssp. *walkeri*) – One was seen patrolling along a side tributary, at 1305h, before vanishing amongst dappled shade in dense riparian understorey. The species is easy to recognise (an adult from Mo'orea was illustrated in section 2 of Part 1– see Dunn 2012).

Hypolimnas bolina – Several females were seen; these comprised the archetypal form, form *nerina* (cf. Tennent 2009 p.134 top centre) and partial intermediates (examples of each were illustrated in Dunn 2011, and of these, figures 8, 11 & 12 were from this site). One female inspected a stand of mature growth of *Synedrella nodiflora* (Asteraceae) (Fig. 27) at 1445h and then oviposited on these herbs. Another female was seen basking at 1520h and she oviposited shortly after on young plants of *S. nodiflora* (see Dunn 2011: Fig. 8). One was seen ovipositing on another small herb nearby, which seemed a bit like *Portulaca* (Portulacaceae) but which was likely a seedling of *S. nodiflora. Synedrella* is probably an important host sustaining the species in the Pacific region, I earlier reported oviposition on it on Kosrae (Federated States of Micronesia) and on New Caledonia (Dunn 2007).

Phalanta ?gabertii – An adult seen (at c.1500h) was almost certainly this species (if there are no other *Phalanta* species in French Polynesia) but no photographs were obtained to confirm the species identification. It was distinctly brownish in coloration and smallish, presenting visually typical of this species and genus, and I feel confident in saying that it was not *Vagrans*.

?*Vagrans* – One sighting of an undetermined butterfly seen flying at 1450h presented as orange and slightly larger than the above species; it may have been *Vagrans egista* (rather than *Phalanta*). In Tahiti, *Phalanta* appeared more brownish in flight – see above record – but I did not see this *Vagrans*-look-a-like at close range to positively confirm the genus. Hence, I offer this observation (as per my field notes) with a measure of doubt, as in-flight encounters can be perceived deceptively at times, particularly if the adult is aged. Tennent (2002) listed the Society Islands in the generic distribution, but *Vagrans egista* was not listed later by Tennent (2006) in the Pacific-

checklist and so its existence may not have been authenticated from this chain in French Polynesia. However, subspecies *bowdenia* (see Fig. 28) is present in the Austral group of islands (Tennent 2006) to the south of the Society chain. Given an historic possibility here, other enthusiasts and experts visiting Tahiti should keep watch to clarify if *Vagrans* is also present on Tahiti Nui.

Acknowledgement

Dr Darrell Kemp kindly examined images of *Synedrella* herbs and assisted with the species identification.

References

Dunn, K.L. 2007. Field notes on some butterflies from Kosrae, Micronesia. *Butterfly & Other Invertebrates Club Inc. Newsletter* No. 47: 13-22.

Dunn, K.L. 2011. The presence of *Lampides boeticus* (Lepidoptera: Lycaenidae) in The Society Islands and notes on other butterflies seen in French Polynesia. Part 1: Mo'orea & Bora Bora. *Metamorphosis Australia, Magazine of the Butterfly & Other Invertebrates Club* 63: 27-32 (*partim*).

Dunn, K.L. 2012. The presence of *Lampides boeticus* (Lepidoptera: Lycaenidae) in The Society Islands and notes on other butterflies seen in French Polynesia. Part 1: Mo'orea & Bora Bora. (*Continued as Section 2*). *Metamorphosis Australia, Magazine of the Butterfly & Other Invertebrates Club* 64: in press.

Hara, M. & Hirowatari, T. 1989. A new species of the genus *Nacaduba* Moore (Lepidoptera: Lycaenidae) from Tahiti Island. *Tyo to Ga [Transactions of the Lepidopterological Society of Japan]* 40(2): 133-139.

Tennent, J. 2002. *Butterflies of the Solomon Islands: Systematics and biogeography*. England: Storm Entomological Publications.

Tennent. J. 2006. *A checklist of the butterflies of Melanesia, Micronesia, Polynesia and some adjacent areas.* Zootaxa 1178. Auckland, New Zealand: Magnolia Press.

Tennent, J. 2009. *A field guide to the butterflies of Vanuatu (Ol butterfly blong Vanuatu).* England: Storm Entomological Publications.

Fig. 19. Mount Marau ridge – towers 1 & 2 as seen from precipice at the 8km site.
Fig. 20. Scarp lantana adjacent tower 2, looking N by W to Pira'e, east Papeete.

Fig. 21. Spine-ridge track, with steeper than 45 degree inclines, looking east to hilltop.

Fig. 22. North-east scarp along spine-ridge track and view of massif beyond eastern hill.

Fig. 23. Canopy of tropical montane *Weinmannia*-dominated cloud forest on the plateau, seen from about the 7.5km point.

Fig. 24. *Nacaduba tahitiensis* (Lycaenidae): fresh male roosting near tower 2 during overcast weather

Fig. 25. *Phalanta gabertii* (Nymphalidae): male perched near tower 2.

Fig. 26.Tower 1, as seen from the 9-10km sector, during overcast weather on the plateau (tower 2's antenna can be seen behind tree line)

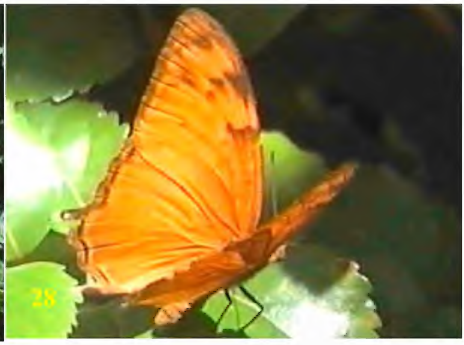


Fig. 27. Mature growth form of *Synedrella nodiflora* (Asteraceae) at Bain Loti, 2.5km SSE of Pape'ete.
Fig. 28. *Vagrans egista* (ssp. *bowdenia*): female from Avatiu Stream, Cook Islands, 25 Jan 2003 (KLD). This subspecies is also known from the Austral Islands (French Polynesia) but there are no authenticated reports of it on Tahiti; it may occur there though.

Photos Kelvyn Dunn

****

Notes on the life of Charles King (11.5.1890 – 28.2.1973) – Naturalist and Amateur Entomologist - *Ian Ferrier*

Charles King was born in 1890 and lived in Windsor, Brisbane, for most of his life. He had a natural talent for mental arithmetic and this served him well in his initial occupation as a builder.

He married Elizabeth Wighton, who also resided in Windsor, in 1914 and it appears their courtship had largely been conducted on the train as they both travelled to work. They had two daughters, Florence (1916) and Mabel (1919).

Charles' aptitude with figures, however, seemed to lead to a bout of risk-taking (gambling) which resulted in him having to sell their first home. It appears that, to right the ledger, Charles took a job as a building supervisor on a contract in Malaya for a couple of years around 1920. He returned from this venture a changed man, having contracted Malaria which resulted in a massive weight loss and recurrent bouts of

Charlie King in Malaysia 1920
Photo courtesy of the King family

fever for several years.

On his return, the family settled into their new home in Seventh Avenue, Windsor, which Charlie named "Amherst" (after a bird, the Lady Amherst Pheasant) and where he built numerous aviaries in the yard. My mother, Mabel, recalled a tame Macaw and Emus strutting around the yard, while my Aunt Florence tells of a pair of Green Peahens, one of which used to accompany her to Windsor School and fly home as soon as she reached the school gate!
On reflection, Charles and Liz appeared to be a couple with strong individual personal interests that were totally disparate. Charles loved the bush and Nature in general whereas Liz's interests were at the other end of the spectrum – high fashion and music. Both their daughters were raised to be exceptional pianists. Charles' love of Nature seems to have skipped a generation to me and he invested quite some time into nurturing a fascination of the natural world in me, as Mabel's eldest child.

Around 1930/1931 Liz and Charles established a very up-market dress shop in Fortitude Valley, only to become victims of the Depression and lose everything. At Christmas 1931 Liz presented Charles with a first edition of Neville Cayley's "What Bird Is That?". The flysheet is inscribed "Wishing Dear Charl, a Merry Christmas and a Prosperous New Year – With Love, From Liz". This on the eve of their own 'global financial crisis'!

It was also at this time, amid the financial maelstrom, that Charlie's interest in winged creatures expanded to moths and butterflies. It seemed that at each major setback in his life he found solace by taking up a new interest in the natural world in a fervent manner.

Charlie must have been the 'Ric Nattrass' of his day as he used to deliver a regular nature program on the radio for the ABC. His wife, Liz, maintained that he had a lovely speaking voice. He counted Dave Felsman, Queensland Manager of the ABC, as a good friend and I believe Mr Felsman sourced Charles a copy of the difficult to procure book "What Butterfly Is That?" by G A Waterhouse, published by Angus & Robertson Ltd, Sydney, in December 1932.

Charles King Collection: the Ghost Moth *Aenetus eximius* - Photo Ian Ferrier

Charles and Liz had always had an interest in Mount Tamborine and frequently holidayed there. They had, at various times, owned different properties on the mountain. One was located close to the upper entry to Palm Grove National Park and later, around 1956, Charlie built a house on Knoll Rd at North

Tamborine. He would spend his evenings 'light-trapping' insects on illuminated white bedsheets strung up in the yard, while his days were spent traipsing through the rainforest and adjoining wet sclerophyll areas searching for the wood-boring "Ghost Moths" (sometimes referred to as "Splendid Swift Moths") such as *Aenetus ramsayi*, whose larvae favour the Native Tamarind, *Diploglottis australis*. In 1962 he contributed an original article (paper), on his life history observations of six species of these ghost moths, to the Queensland Naturalists' Club journal (ref).

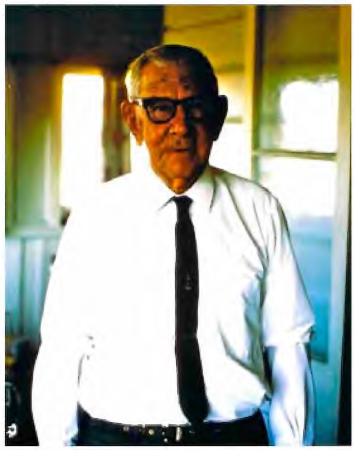
Charlie boasted about his discovery of an extremely rare 'moth' on Mount Tamborine, only known to science from a few specimens. I am pretty certain (thanks to Geoff Monteith) that this fabled insect, that Charlie called 'illidgei', was in fact a very rare lacewing, *Megapsychops illidgei,* the so-called "Snake's Head Lacewing". Geoff advises that this insect is rather 'moth-ish', has large, whitish wings that are partly translucent and with markings (at rest) that vaguely resemble the head of a Cobra. It has only been taken on a couple of occasions at Mt Tamborine.

Snake's head lacewing
(*Megapsychops illidgei*) - Photo anon.

Charlie was justifiably proud of his collection and would not countenance any imperfect specimens. I gather that several people had shown interest in purchasing the collection. One of these interested parties was Dr J. L. (Lin) Gressitt who was the head of the Entomology Department of the privately endowed Bishop Museum in Hawaii, which now operates as the State Museum for Hawaii. Geoff Monteith advises that the museum is well known for its long history of entomological exploration throughout the Pacific region and has massive collections from all the islands groups in the region and, although Australia is in that equation, they have concentrated their field work in more exotic places like New Guinea and lesser islands. Lin Gressitt had spent 6 months on sabbatical in the Entomological Department at the University of Queensland, in Brisbane in 1958, during which time Mr Athol Perkins (then Head of UQ Entomology) had taken him to meet Charlie and to see his collection.

Geoff finished his entomology courses at UQ during 1961 and Mr Perkins then employed him as "departmental collector" and later curator of the UQ collection. Sometime soon after that Lin Gressitt got in touch with Mr Perkins and said that he had been talking with Charlie King and had made arrangements to purchase his collection. Lin asked if someone could go to Charlie's home and pack the collection for consignment by ship to Hawaii. It befell Geoff to perform this task which was undertaken somewhere between early 1962 and late 1965.

Around 1970 my parents purchased a shack at Mount Tamborine, just below the site of the old Eagle Heights Hotel. At one stage, when trimming some Flooded Gum (*Eucalyptus grandis*) regrowth which was obscuring their view to the Gold Coast, I encountered some 'bags' on the saplings, samples of which were relayed to Charlie. This was rather fortuitous, as by this time he had sold his insect collection and had lost a leg due to gangrene. The 'bagmen' turned out to be larvae of the Ghost Moth *Aenetus exemius* and rekindled Charlie's *raison d'etre*. He began writing to his old insect collecting contacts in Australia and overseas and "hatching out" the ghost moths that I had been able to find on Mt Tamborine. He mentored me on how, where and when to collect the *Aenetus* spp. larvae and how to set and preserve the subsequent moths. Unfortunately this experience was all too short as he suffered a massive internal haemorrhage and passed away in early 1973.



Charlie King at Bush Street, Windsor
probably late 1960's
Photo courtesy of the King family

To me, Charlie's life seemed to mirror a 'lepidopteran' life-cycle, with each major 'Milestone' (or, more accurately in his case, 'Setback') heralding a new incarnation of passionately followed interests from Nature's treasure trove!

Acknowledgments:
My wife, Judy Ferrier, assisted by compressing much longer biographical notes into this (abridged) version. I thank Geoff Monteith for contributing the information on Charlie's collection and John Moss for his editorial assistance.

Reference:

King, C., 1962. Life history notes on moths of the genus *Aenetus* (Lepidoptera: Hepialidae). *Queensland Naturalist* 16: 102-103.

Ed.: A reference to Charles King was made in the Creature Feature in BOIC Magazine issue number 63.

****

The Butterfly - A brief history and examples of survival techniques –

Hilton Selvey

The earliest insects according to the fossil record lived 300 MYA. Butterflies and moths appear in fossils 140-200 MYA at about the same time as flowering plants appeared. The earliest butterfly was named *Prodryas persephone.* It is a fossil found in Florissant, Colorado USA (Ref. 6). The specimen is now held at the museum of

Comparative Zoology, Harvard University. Well-preserved butterflies were found in amber and dated 65MYA (Ref. 4).

In Australia there are over 416 species (Ref. 1) and world wide there are 14,750 known species (Ref. 2). Other authorities quote much higher figures to take into account those species still to be discovered.

Like all insects and non-mammals, butterflies are endothermic and need warmth to prevent their metabolism slowing down. A common method used to photograph butterflies is to slow their metabolism right down by putting them in the fridge. When removed they are motionless until they have warmed up. Sometimes butterflies can be seen in the sunshine spreading their wings in order to get warm or in order to attract a mate.

Over the years butterflies have developed tactics to avoid being eaten. The fast and erratic flight of many species of the family Pieridae is a good example. Other species have cryptic patterns on their undersides to act as camouflage.

Eggs are often minute and larvae rest on the central vein of the food plant making them almost invisible. Other larvae like those of *Danaus plexippus* (Monarch) and *Euploea core* (Common Crow) advertise and warn potential predators they are poisonous by their striking colours. Unlike the Common Crow the Monarch has a slow gliding flight. Its wings are brightly coloured advertising to predators that they are poisonous. The *Ornithoptera* (Birdwing) species are also poisonous as they, like other poisonous larvae, absorb poisons from the food plant. The *Ornithoptera* larvae are black and hide under the leaf they are feeding on. The butterflies are also poisonous, their flight is fast and erratic but they also glide.

But two masters of larval and pupal disguises are *Phaedyma shepherdi* (White-banded Plane) (Ref. 2) and *Papilio demoleus* (Chequered Swallowtail) (Fig. 9).

Fig. 9 Chequered Swallowtail (*Papilio demoleus*)

The Chequered Swallowtail's strategy differs from that of the White-banded Plane, which modifies leaves to look like larvae and pupae (Ref. 5). The Chequered Swallowtail makes no attempt to modify one of its food plants, *Cullen tenax.* Instead it disguises its eggs, larvae and pupae to resemble parts of the plant. The eggs are 1 mm in diameter and white in colour, changing to a dark colour as the embryo develops exactly duplicating a single seed of *Cullen* (Fig. 1). On emerging the tiny larvae are black and like many other newly emerged larvae are covered in branching spines, presumably a protective mechanism (Fig. 2). But unlike the

Fig. 1 Egg

Richmond Birdwing butterfly larvae, which lose all their spines at the first instar, the spines gradually disappear over successive instars. The larvae also gradually change their appearance by developing lighter coloured areas. When about 25 mm long they resemble a seedpod (Fig. 3) or decaying leaves.

Fig. 2 Newly emerged larva

Fig. 3 Larva has changed colour and resembles a seedpod

Fig. 4 Larva now resembles an unripe seedpod

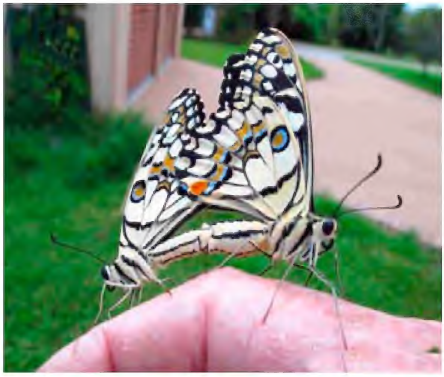
As the larvae continue to grow they change colour again, this time to green; the larvae are now able to hide in the food plant. Larger larvae change their appearance to resemble an unripe seedpod (Fig. 4). The pupae are bright green and hidden in the food plant (Fig. 5), but light tan if formed on a light coloured surface or grayish if formed on a dark surface (Ref. 3). It is only when the butterfly is ready to emerge that the beautiful colours of the unexpanded wings can be seen through the translucent pupal cuticle (Fig. 6).

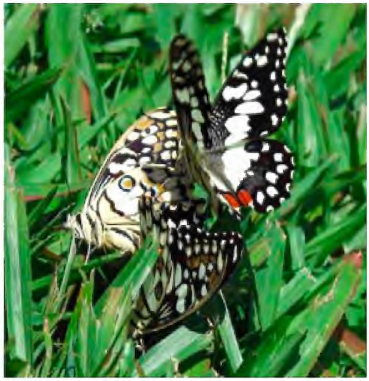
Fig. 5 Pupa

Fig. 6 Pre-emergent pupa

The butterfly's next strategy is to reproduce as soon as possible; to this end a male will appear as if by magic and force his attentions on the emerged female (Fig. 7). To my astonishment a second and then a third male tried, in vain, to get into the act. I found the jumble of butterflies on the grass was very difficult to photograph (Fig. 8).

The coupled pair flew off, presumably with the female leading, since the female is larger than the male.





Figs 7 and 8 Mating

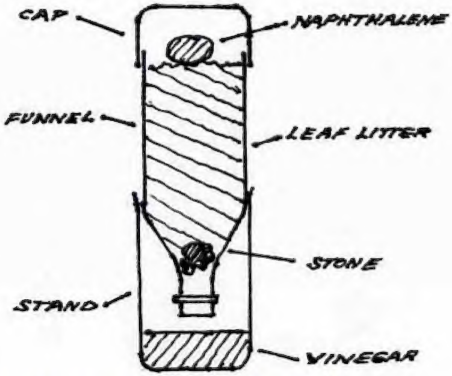
Acknowledgements:
Ross Kendall for numerous helpful suggestions.
Enid Selvey who edited the manuscript and used her computer skills to produce and email the photographs.

References:
1. Braby M.F. *The complete field guide to Butterflies of Australia.* CSIRO Publishing 2004 p.9
2. Feltman J. *The Illustrated Encyclopedia of Butterflies.* Published by Grange Books, 2001 p.7
3. Kendall, R *Personal communication* January 2012
4. *New Scientist* March 2004
5. Selvey, H.M. *Magazine of the Butterfly and Other Invertebrates Club.* White- banded Plane or Common Aeroplane *Phaedyma shepherdi* (Lepidoptera: Nymphalidae) Issue No 59 December 2010
6. *Wikipedia*

Photos Hilton Selvey

****

The TJ Berlese Bottle – *Denis Kitchin*
A modified version of the conventional Berlese funnel for individual student use.



A conventional Berlese funnel uses a light/heat source suspended above a large funnel to process a considerable quantity of leaf litter. Leaf litter insects/invertebrates are driven downwards in the funnel and into a container of killing agent as the litter progressively dries. Electrical power for the

light/heat source is required and the process takes considerable time.

The prototype of this modified Berlese funnel was developed by Mr T. Jack of Brisbane to provide students with a simple, do-it-yourself, quick acting, no-cost means of sampling leaf litter insects/invertebrates at home. The idea to use naphthalene in place of the light/heat source comes from Dr G. Monteith who uses this technique in the field to process leaf litter in a conventional Berlese funnel when time is short and electricity is unavailable.

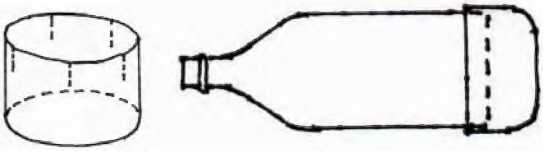
Materials

2 x 1.25 litre softdrink bottles (or similar)
Scissors/sharp knife
¼ cup white vinegar (water with a touch of detergent to break surface tension can be used)
1 teaspoon naphthalene and a tissue in which to wrap it for easy retrieval
(a tissue dampened with insect repellent eg. Aeroguard but not a killing agent may work if naphthalene is not available).
A small irregular stone just large enough to partially block the neck of the bottle

Construction

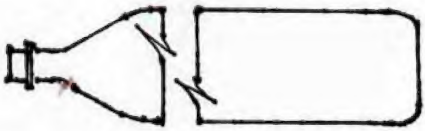
Cut the bottle for the funnel into two sections with scissors as shown in the diagram.

You may find it awkward to start the cut with scissors.



Make several cuts about 2cm deep in the rim of the short section.
This helps when easing this section back over the funnel section as a reasonably airtight cap.

Cut the second bottle as shown for the stand section which must be tall enough to keep the spout of the funnel above the killing agent.



Operation

Select a damp shaded area of the garden with suitable decaying leaf litter.
Drop the stone into the neck of the funnel to help prevent litter falling through.
Quickly: Brush aside any dry leaves and surface material.
Scoop up the smaller more decayed and damper litter from the soil surface.

Fill the funnel loosely – **do not tamp** – to facilitate movement of insects and gaseous naphthalene downwards through the leaf litter.
Fold the naphthalene loosely in the tissue and place it on top of the leaf litter.
Fit the cap section over the funnel
Pour the vinegar into the stand section and place the funnel in the stand.
KEEP OUT OF DIRECT SUNLIGHT TO AVOID OVERHEATING.

Some specimens will normally have dropped into the killing agent by the following morning. You will probably be able to place some to order by eye but many litter insects/invertebrates are very small and a 10x magnifying glass or microscope will be needed to see details clearly for most specimens.

****

Life history notes on the Spotted Pea-blue, *Euchrysops cnejus cnidus* (Fabricius, 1798) Lepidoptera: Lycaenidae - *Wesley Jenkinson*

This small beautifully coloured species has previously been known as the Cupid. In eastern Australia it is encountered along much of Queensland and into northern New South Wales. It mainly occurs in disturbed areas within open forest and woodland habitat where the legume host plants are established. The species is usually locally common. Adult flight is rather rapid and both sexes are found in the vicinity of the legumes where they are breeding.

In particular the females commonly utilise two common exotic host plants Siratro (*Macroptilium atropurpureum*) and Phasey Bean (*M. lathyroides*) (Fabaceae). These two plants were originally introduced to assist with cattle grazing and both species have now become common weeds.

Within Queensland, males show little variation but females show slight variation in the extent of the metallic blue on the upperside.

Wingspans for the pictured adult specimens are: males 20mm and females 23mm.

Euchrysops cnejus cnidus (Spotted Pea-blue)
Images left to right: male, female, male underside, female underside

Ovipositing females typically fly slowly about the host plant, settle and walk around looking for a suitable spot to oviposit. The abdomen is then curled onto the host plant

where the eggs are laid singly (while ovipositing the wings are closed). This usually occurs at the base of flower buds, on young shoots or along stems of the host plant. I have observed ovipositing during sunny or warm cloudy conditions from mid morning to mid afternoon.

In March 2008, an egg was collected and raised through to an adult in captivity on *M. lathyroides.*

This freshly laid egg was white, mandarin shaped, approximately 0.7 mm wide x 0.5 mm high, top 1/3 of shell relatively smooth and flat, the lower 2/3 of shell with short rounded spines.

←Freshly laid egg

Larval instars

Mature larva feeding in seedpod

Pupa

Unlike some other species this larva did not consume the eggshell after emergence but fed on fresh leaf and flower buds. It was not observed if the larva fed during the day or at night, however the mature larva was observed burrowing into a green seed

capsule during daylight hours. Under natural conditions the larvae are usually attended by small ants, but will survive happily without them. This larva attained a length of 14mm and completed 5 instars as pictured.

In captivity the pupa, measuring 10mm in length, was located below a dead leaf of the host plant. It was attached with silk by the cremaster and a central girdle.

Egg duration was 4 days, larval duration was 18 days while pupal duration was 11 days.

Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have records of adults from September, November, December and February to May. This would indicate that there would be two or more broods in one season. The adults are more numerous from late summer to late autumn in this region.

References:

Braby, M.F., 2000. *Butterflies of Australia – Their Identification, Biology and Distribution.* vol 2. CSIRO Publishing, Melbourne.

Photos Wesley Jenkinson

****

Crabby Spider Encounters – *Lois Hughes*

Having received the images of the spider (the Triangular Spider *Arkys lancearius*) which I was to illustrate a few days previously, I was delighted to find two of them, each hanging on a thread of silk, suspended from the back of the seat of the ride-on mower, obviously having been brushed from vegetation during mowing. I collected them in a clear container and they proved useful as I painted. I was surprised at their smallness as the images I received are greatly enlarged for my benefit, so details are clearly enhanced.

Weeding by the creek a few days later I disturbed a Jumper ant's nest and was bitten on my hands. Quickly retreating, I also felt a bite on my foot inside my rubber boot. Believing it to be another ant I squashed it with my other foot as Jumper ants bite repeatedly if not quickly disposed of.

Imagine my surprise when I discovered the culprit was the same "crabby" spider I have painted! The bite was almost as painful as the ant's and lasted for about 30 minutes, as stated in Wildlife of Greater Brisbane which I had consulted for information and was relieved it wasn't poisonous!

And there's still more ….. next morning I saw a small orange bodied, black-legged creature stalking a Spiny Stick insect, poised to pounce. I pounced first and got bitten rather painfully for my trouble! The message seems to be – keep well clear of orange and black "creatures". Maybe in their world their colouration spells danger!

Fungi! Can this be the future as a biological control agent to manage the citrus pest *Musgraveia sulciventris* (Stål) (Hemiptera: Tessaratomidae)? – *Ron May*

The first citrus trees were planted in Sydney in 1788 (Smith *et al.* 1997) and by the 1820's pests and diseases were found on plants which were imported into Australia. *Musgraveia sulciventris,* the bronze orange bug, is now a pest from north east of Gayndah in Queensland through to the Sydney coastal areas.

Natural predators, like the assassin bug (*Pristhesancus plagipennis*) and the wasp (*Anastatus biproruli*) can control *M. sulciventris* to some degree (Smith *et al.* 1997), but we need more research and development into a biological agent to manage this citrus pest.

Fig. 1

In March of 2011 I came across a bronze orange bug on a grapefruit tree at Toowoomba. The bug was enveloped by that which I thought was one fungus (later confirmed as four fungi). The dead specimen bug was photographed (Figs. 1, 2 and 3) and then sent to Don Papacek at Bugs for Bugs in Mundubbera, Queensland, for identification of fungi and bug.

Fig. 2

Fig. 3

Don sent the specimen to Andrew Beattie and Christine Turnbull (Department of Biological Sciences) at Macquarie University in Sydney, who extracted the DNA from the bug (D. Papacek pers. comm.). Andy later identified four entomogenous fungi which were isolated from the specimen of *M. sulciventris.*

These pathogens are known biological control agents. However this could be the first recording of *M. sulciventris* having this cocktail of entomogenous fungi enveloped on it, *Beauveria bassiana* having been the dominant species with *Cladosporium cladosporioides, Fusarium chlamydosporum* and *Hypocrea pseudokoningii* as (provisional) species (A. Beattie pers. comm.).

Some social insects like bees and ants have antimicrobial defences in the form of secretions from their thoracic glands which, along with multiple matings to improve the genetic pool, can reduce the disease risk within hymenopteras (as cited from Stow *et al*. 2007). Data by (Turnbull *et al*. 2010) suggest that genetic traits that enlarge the colony size will have increased antimicrobial strength.

So where does this leave *M. sulciventris*? Have they got any antimicrobial defences, or was the specimen found doomed from birth?

In the future can a biopesticide be developed from these four pathogenic fungi to help control the bronze orange bug (*M. sulciventris)*?

Acknowledgements: I am indebted to Dr. Dan Papacek for identification of the bug *Musgraveia sulciventris*, also to Professor Andrew Beattie and Dr. Christine Turnbull for their ground-breaking work on DNA identification of the four pathogenic fungi.

References:

Hely, P.C. *et al*. 1982. Insect Pests of Fruit and Vegetables in New South Wales. *National Library of Australia.*

Smith, D. *et al*. 1997. Citrus Pests and their natural enemies. *D.P.I. Publication Brisbane.*

Stow, A. *et al.* 2007. Antimicrobial defences increase with sociality in bees. *Biology Letters (2007)* doi:10.1098/rsbl.2007.0178.

Turnbull, C. *et al.* 2010. Antimicrobial strength increases with group size: implications for social evolution. *Biology Letters (2010)* doi:10.1098/rsbl.2010.0719.

Photos Ron May

****

There is so much still to learn! - *Pheraspis symmetra* Turner, 1917 (Notodontidae: Notodontinae) - *Ross Kendall*

On New Year's Day 2012, I found a 5 cm long moth caterpillar (Fig. 1) feeding on a young Whitewood tree (*Atalaya hemiglauca*) near Hughenden, Queensland. The actual location was at 20° 48' 52.85" S, 144° 14' 11.55" E.

I placed the caterpillar in a jar with leaf litter and soil on the bottom and more Whitewood leaves on top. It pupated on 5th January. The pupa (Fig. 2) was 28 mm long. An adult emerged on 15th February. This adult is 30 mm long with a wingspan of 60 mm (Figs 3, 4 and 5).

There is nothing in Ian Common's "Moths of Australia" to suggest a name for this moth so I initially referred images to moth super sleuth, Peter Hendry. Peter worked his magic and came up with the suggestion *Pheraspis rectilinea*. I subsequently referred the images to Ted Edwards in Canberra.

Ted responded: "It would be great to see the life history of the moth recorded and I am not surprised that you could find little information about it. I do not think your moth is *Pheraspis rectilinea.* This species is known from few specimens and has very

different forewing markings. Also, and more easily observed, the pectinations in the female antennae are different.

I believe your moth is *Pheraspis symmetra* for which the pattern and antennae are right. We have specimens (in the Australian National Insect Collection) from the Kimberleys, WA, Katherine and Alice Springs NT, Innamincka, SA, Cunnamulla, Hebel and Yamala, Qld and the Warrumbungles, NSW. I do not think anything has been published on its life history before."

I would be interested to hear from anyone who has further information on this moth.

Reference: http://www1.ala.org.au/gallery2/v/Notodontidae/Notodontinae/Pheraspissymmetra/

Fig. 1.*Pheraspis symmetra* larva
Fig. 2. *Pheraspis symmetra* pupa
Fig. 3. *Pheraspis symmetra* adult
Fig. 4. *Pheraspis symmetra* upperside
Fig. 5. *Pheraspis symmetra* underside

Photos
Ross Kendall

Ed.: Based on the antennae, Peter concurs with Ted that *P. symmetra* is the most likely suspect.

In a Corinda Garden

Continuing the series of articles which the late Murdoch De Baar had left with me…(Ed.)

Moth Views - *Murdoch De Baar*

I have presented a few moth views from my garden.

The larvae (hairy caterpillars) illustrated in Figs. 1 and 2 (Tussock moth and one of the Urticating Anthelid group) can cause irritations to the skin and eyes. The photographs show the different types of setae (bristles and hairs).

At night, an underside view of a moth alighting on a window (Fig. 3) can leave you wondering what moth you are looking at. A quick trip outside with a torch can reveal a totally different and much plainer view (Fig. 4).

The Crinum moth (Fig. 5) larvae chew leaves and bore into stems of lilies such as *Crinum* spp. The moth was previously placed in the genus *Calogramma* but is now under *Spodoptera*.

Plumed moths are strange (Fig. 7). Their wing outline is strongly disrupted, and thus could confuse a predator.

The Tiger moth group has some gorgeous representatives such as the *Utetheisa* shown in Fig. 6, and when it landed on this flower, I just had to grab a camera.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Photos Murdoch De Baar

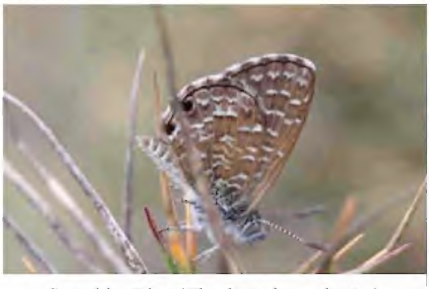
Fig. 1. Tussock moth larva, *Orgia australis* Walker, fam. Lymantriidae.
Fig. 2. Anthelid moth, *Anthela varia* (Walker), fam. Anthelidae.
Fig. 3. *Luxiara ochophara* (Turner), fam. Geometridae (underside).
Fig. 4. *Luxiara ochophara* (Turner), fam. Geometridae (upperside).
Fig. 5. Crinum moth, *Spodoptera picta* (Guerin-Meneville), Noctuidae
Fig. 6. Tiger moth, *Utetheisa pulchelloides* Hampson, fam. Arctiidae.
Fig. 7. Many Plumed moth, *Alucita phricodes* Meyrick fam. Alucitidae.

EXCURSION REPORTS

Lota Boardwalk – Saturday 22nd October, 2011 – *Rob MacSloy*

An overcast day greeted the six hardy souls who turned up for a walk along the Lota Boardwalk. These conditions, plus a few spots of rain later, kept invertebrate activity to a minimum.

Very few butterflies were seen with Samphire Blue (*Theclinesthes sulpitius*) being the highlight. A day-flying Tiger moth was also seen.



Samphire Blue (*Theclinesthes sulpitius*)
Photo Graham Macdonald)

Most of the time was spent identifying and photographing various butterfly host plants including *Chamaecrista nomane* (Grass Yellows) and *Parsonsia straminea* (Common Crows). Of interest were several specimens of *Parsonsia brisbanensis* – a welcome respite from the ubiquitous *straminea.*

Sarcocornia quinqueflora host plant for the Samphire Blue
Photo Glenn Leiper

As it was low tide there were a few crabs around the mudflats near the mangroves – one with a bright orange claw and another with a white claw. A gastropod was also seen on mangrove leaves.

A few cicadas were calling including Bark Squeaker (*Pauropsalta corticinus*), Sprinkler Squeaker (*Pauropsalta annulata*), Black Tree-ticker (*Birrima varians*), Paperbark Cicada (*Cicadetta hackeri*) and Thin-striped Wattle Cicada (*Cicadetta* sp. Nov.). Thank you Lindsay Popple for these photos.

Thin-striped Wattle Cicada (*Cicadetta* sp. Nov.)

Bark Squeaker (*Pauropsalta corticinus*)

Above and above right– Sprinkler Squeaker (*Pauropsalta annulata*)

Right – Black Tree-ticker (*Birrima varians*)

A quiet morning but enjoyable none the less and the location is certainly worth a future visit.

Excursion to the Tweed Region – November 26th 2011 – *Ross Kendall*

Club members assembled at the World Heritage Rainforest Centre in Murwillumbah at 9am and headed up the picturesque Tweed River valley to the Mt Warning National Park. We were fortunate to experience quite sunny weather after some solid rain the previous day.

Parking near the entrance to the park, we were soon kept busy observing, identifying and photographing insects of interest. Apart from a brief visit to the creek where Graham McDonald photographed a beautiful Whitewater Rockmaster damselfly (*Diphlebia lestoides*), members patrolled only about 200 metres along the roadside but were rewarded by frequent close sightings of both male and female Richmond Birdwing (*Ornithoptera richmondia*) butterflies. A good number of day-flying moths *Cruria synopla* (see "Metamorphosis Australia" issue No. 59 of December 2010) constantly patrolled an area near the roadsides.

Whitewater Rockmaster damselfly (*Diphlebia lestoides*)

Richmond Birdwing (*Ornithoptera richmondia*)

Day-flying moth (*Cruria synopla*)

Other butterflies observed were Orchard Swallowtails (*Papilio aegeus*), Macleay Swallowtails (*Graphium macleayanum*), Blue Triangles (*Graphium sarpedon*), Pale Triangles (*Graphium eurypylus*), Black Jezebels (*Delias nigrina*), Monarchs (*Danaus plexippus*), a Pearl White (*Elodina* species), Wide-brand Grass-darts (*Suniana sunias*) and the rare Ornate Ochre (*Trapezites genevieveae*).

Numerous large flies observed reminded me of how little I know about this group of insects. Graham's image is of a Snail Parasitic blowfly (*Amenia imperialis*).

Snail Parasitic blowfly (*Amenia imperialis*)

After returning to the Rainforest Centre where we lunched beside the Tweed River, we visited the Tweed Caldera local artists' workshop.

Regent Skipper (*Euschemon rafflesia*)

We then took a twenty-minute drive to the Tweed Valley Botanical Gardens. Our primary interest was in a patch of relatively untouched Brush Box forest nearby. It did not take long before Regent Skipper (*Euschemon rafflesia*) caterpillars were found in leaf shelters on Velvet Wilkea (*Wilkea huegeliana*) bushes. Margaret Greenway was the first to spot an Eastern Dusk Flat or Common Red-eye (*Chaetocneme beta*). Graham managed to photograph an adult Regent Skipper and was keen to point out some rare plant species namely, Spiny Gardenia (*Randia moorei*), Veiny Laceflower (*Archidendron muellerianum*) and Black Walnut (*Endiandra globosa*).

Many thanks to Greg Newland for taking the time to escort us around his local area on what proved to be a very enjoyable day.

Photos Graham Macdonald

MYSTERY INSECT

Who Lives Here Back O' Bourke? – *Margaret Greenway*

This 'burrow' surrounded by a raised circular mound of dead leaves is the entrance to the nest of the mulga ant *Polyrhachis macropa* Wheller ; aptly named since it only appears to collect the dead leaves of the mulga (*Acacia aneura*) to make the nest mound. Myself and BOIC member Ellen White came across several of these unusual nest mounds in mulga shrubland after we became stranded in Gundabooka National Park, after a 30mm rainfall event. Following rain, the usually hard red clay soil initially becomes a sheet of water (as these soils are highly impervious) however, as the water gradually soaks into the soil they become soft. The ants had been particularly active overnight in their tunnels bringing small balls of the red clay to the surface. On the other hand Ellen and I were bogged and grounded!!!

Dr Steve Morton (CSIRO), an expert in arid zone ecology, believes these ants build their bizarre enclosures as miniature levees to prevent flooding during these infrequent heavy rains (Ecos 74, 1992/93p 4).

Reference:
Ecos 74 (1992/93). "Flood control by ants" (anon). P 3-4. CSIRO Division of Wildlife and Ecology, Information Services.

Photo Margaret Greenway

YOU ASKED

These eggs, photo from QPWS Resource Ranger Rod Hobson, are almost certainly of a small pentatomid bug. The circle of processes marks the perimeter of the operculum or cap which the nymph pushes off when it hatches. The processes themselves are called micropyles or sometimes aeropyles and are hollow with the aperture leading to the interior of the egg. I think they have the dual function of allowing the eggs to exchange gases with the atmosphere and giving an access route for sperm after copulation (the latter while the eggs are still inside the female's body). These micropylar processes are usually little knobs but sometimes they are drawn out into elongate processes like in this example. ***Geoff Monteith***

****

I've just seen a lot of these insects flying around one of my large paperbarks. They look like wasps, but are not at all aggressive, and seem to fly differently. Glassy winged too. ***Martin Bennett***

I believe your "waspy critters" are adult Sawflies. These are related to wasps but as you have ascertained have no stinging mechanism! You have probably seen their rather revolting larvae in clusters often on eucalypts where they regurgitate their foul-smelling stomach contents as a deterrent to predators! It is likely that the paperbark *Melaleuca quinquenervia*(?) is its larval foodplant. Someone may be able to give us a species name. ***John Moss***

Photo Martin Bennett

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Annual General Meeting

What: Our Annual General Meeting and election of Office Bearers. Following the AGM Graham Macdonald will present a slide show of 120 images of butterflies, moths and a few other invertebrates of the Cape York Peninsula. All photos were taken in July 2011 in the dry season.

When: **Saturday 14th April, 2012** from **10 am** for the AGM

Where: Redlands IndigiScapes Centre, 17 Runnymede Road, Capalaba

RSVP: Daphne 3396 6334 or email daphne.bowden1@bigpond.com to RSVP or for more details.

Planning and Management Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members.

When: **Saturday 12th May, 2012** from **1.30 pm**

Where: Rob MacSloy's home, Alexandra Hills (phone Rob for directions)

RSVP: Rob on 07 3824 4348 or Daphne on 07 3396 6334

Revisiting a 2006 butterfly host planting at Eprapah

What: The butterfly host plants in the garden of the scout premises at Victoria Point have grown in leaps and bounds. Those who had visited previously will see an enormous difference especially in the extent of the Birdwing vines and the other native vines for Purple Crows, Four-bar Swordtails, Banded Awls etc.

When: **Saturday 28th April, 2012**

Where: Meet 9 am at the picnic table just inside the Victoria Point Scout premises on the corner of Cleveland/Redland Bay Rd & Colburn Ave, UBD 226 D2 (need to approach from the north -- Cleveland direction for easiest access). If the gate looks closed it will only be "dummy locked". Park inside. Bring your morning tea, camera, binoculars (for the Mistletoe Birds!) and insect repellant (for the mozzies of course!)

RSVP: IMPORTANT: register with John Moss 3245 2997 or email johntimmoss@gmail.com, who may have some passenger space in his car leaving 8.30 am from Capalaba/Sheldon.

An afternoon identifying Arctiinae

What: Calling upon serious studiers and collectors of Lepidoptera, in particular Moths. Bring along your unnamed Arctiinae and see if together we can name them. A light trap will be run in the evening for those who wish to stay. If you are staying bring something for a BBQ. Extras and afternoon tea will be provided.

When: **Saturday 26th May, 2012** starting at 1.00 pm till late.

Where: Peter Hendry's home at Sheldon

RSVP: You must book a place. Directions will be provided. Please ring Peter on 3206 0048 between 2:00pm and 7:30pm weekdays.

Disclaimer

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

Acknowledgments

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provided the cover painting
- Daphne Bowden who works on layout, production and distribution
- John Moss, Michael Rix and Ted Edwards for scientific referencing and proof reading of various articles in this issue of the magazine

We would like to thank all these people for their contribution.

Are You a Member?

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible. **Membership fees are $25.00 for individuals, schools and organizations**. If you wish to pay electronically, the following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership number and surname e.g. **234 Roberts.**

Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next event – The Annual General Meeting, Saturday 14th April from 10 am (see BOIC Programme for details)